



DEPARTMENT OF ENERGY

Funding Highlights:

- The mission of the Department of Energy (DOE) is to advance U.S. national security and economic growth through transformative science and technology innovations that promote affordable and reliable energy through market solutions, and meet U.S. nuclear security and environmental clean-up challenges.
- The 2021 Budget makes strategic investments to maintain global leadership in scientific and technological innovation, including basic research in support of the Administration's efforts to foster industries of the future. The Budget also supports aggressively modernizing the nuclear security enterprise that underpins the safety and security of Americans both at home and abroad.
- The Budget proposes to sell federally-owned and operated electricity assets, which would save an estimated \$4.1 billion over 10 years. Selling these assets would encourage a more efficient allocation of economic resources and mitigate unnecessary risks to taxpayers.
- The 2021 Budget requests \$35.4 billion for DOE, an 8.1-percent decrease from the 2020 enacted level of \$38.5 billion.

The President's 2021 Budget:

The Budget for DOE reflects the critical role DOE has in promoting energy dominance and economic growth and in protecting the safety and security of the American people. The Budget enables advancement of American leadership in science and technology, a cornerstone to achieving these goals. American ingenuity combined with free-market capitalism can drive tremendous technological breakthroughs, leading to improvements in America's economy and environment. The Budget focuses resources on early-stage research and development (R&D) of energy technologies, where the Federal role is strongest, while addressing the need to support later-stage R&D in targeted areas where there are unique challenges. Emphasizing the appropriate role of the Federal Government ensures that taxpayer dollars are being effectively used while implementing fiscal discipline.

The Budget also addresses the challenges associated with developing and maintaining the Nation's nuclear arsenal, another keystone to achieving the goals of security and prosperity. The Budget ensures that the United States continues to secure nuclear and radiological materials worldwide against theft by those seeking to harm this Nation or its allies. The Budget also funds the modernization of nuclear weapons and ensures that the U.S. nuclear force remains superior in the world.

In addition, the Budget promotes continued progress on cleaning up sites contaminated from nuclear weapons production and nuclear energy R&D.

The Budget further protects taxpayers by eliminating costly, wasteful, or duplicative programs. The private sector has the primary role in taking risks to finance the deployment of commercially viable projects and Government's best use of taxpayer funding is in earlier stage R&D. As a result, the Budget proposes to eliminate: the Title XVII Innovative Technology Loan Guarantee Program; the Advanced Technology Vehicle Manufacturing Loan Program; the Tribal Energy Loan Guarantee Program; and the Advanced Research Projects Agency–Energy.

The Budget again proposes to repeal the Western Area Power Administration's borrowing authority that finances the construction of electricity transmission projects. Investments in transmission assets are best carried out by the private sector with appropriate market and regulatory incentives that support resiliency and reliability.

Advances the Industries of the Future. The Budget prioritizes accelerating artificial intelligence (AI) solutions as part of implementing the Administration's efforts to foster industries of the future. DOE's new Artificial Intelligence and Technology Office will be responsible for providing Department-wide guidance and oversight on AI and will perform a critical role in ensuring offices across the Department are on the cutting-edge of AI technology development and application. The Budget provides \$5 million for this new office to enhance important AI R&D projects already underway. The office would also coordinate crosscutting, mission-relevant projects as part of DOE's broader support for AI investments. In addition, the office would align these investments with the Administration's industries of the future efforts and with the White House Office of Science and Technology Policy's AI strategic priorities.

Supports Cutting-Edge Basic Research. The Budget provides \$5.8 billion for the Office of Science to continue its mission to focus on early-stage research, operate national laboratories, and continue high priority construction projects. Within this amount: \$475 million is requested for Exascale computing to help secure the United States as a global leader in supercomputing; \$237 million is requested for quantum information science; \$125 million is requested for AI and machine learning; and \$45 million is requested to enhance materials and chemistry foundational research to support U.S.-based leadership in microelectronics.

Maintains a Safe, Secure, and Effective Nuclear Weapons Stockpile. The Budget for DOE's National Nuclear Security Administration (NNSA) supports the Administration's Nuclear Posture Review (NPR) by maintaining and modernizing the nuclear deterrent. The Nation's nuclear stockpile must be robust and effective to protect the homeland, assure allies, and deter adversaries. Specifically, the Budget continues investments to extend the life of warheads in the stockpile and modernize the supporting infrastructure.

Strengthens Nuclear Security Science, Technology, and Engineering Capabilities. The Budget maintains unique scientific capabilities at NNSA's national security laboratories, which provide the backbone of the science-based Stockpile Stewardship Program and enable NNSA and the Department of Defense to assess for the President that the Nation's nuclear weapons stockpile remains safe, secure, and effective without the need for nuclear explosive testing.

Prevents, Counters, and Responds to Global Nuclear Threats. Nuclear threats are constantly evolving, and the Budget for NNSA addresses these threats through integrated, coordinated efforts. The Budget increases funding for NNSA's national technical nuclear forensics capabilities, recognizing NNSA's key role in the NPR-required mission, and continues efforts to prevent terrorists

from acquiring nuclear materials by removing materials from around the world and helping countries protect remaining materials.

Provides Reliable and Secure Nuclear Propulsion Systems for the U.S. Navy. The Budget continues DOE's support of a strong U.S. Navy through NNSA's Naval Reactors (NR) program. NR works to provide the U.S. Navy with safe, reliable operation of nuclear propulsion plants for submarines and aircraft carriers, including through the development of reactor systems for the *Columbia*-class ballistic missile submarine. The Budget also eliminates an unnecessary program to develop low-enriched naval fuels that would result in a reactor design that is inherently less capable, more expensive, and unlikely to support the significant cost savings associated with life-of-ship submarine reactors.

Enhances Support for Cyber and Energy Security Initiatives. The Budget supports increased funding for cyber and energy security initiatives, recognizing the seriousness of the threat against critical infrastructure, in line with the 2019 Worldwide Threat Assessment of the U.S. Intelligence Community and the National Cyber Strategy. To support broad, interagency cybersecurity efforts, the Budget provides funding in multiple programs, including \$185 million for the Office of Cybersecurity, Energy Security, and Emergency Response. This funding would support early-stage R&D activities, in coordination with the energy sector, that improve cybersecurity and resilience throughout the supply chain, protecting critical infrastructure from both natural and man-made events.

Emphasizes American Energy Dominance. The United States has among the most abundant and diverse energy resources in the world, including oil, gas, coal, nuclear, hydro, and renewables. The Budget supports an array of efforts that emphasize and strengthen that unique advantage, leveraging the Nation's position as a global leader in energy production and technological innovation.

The Budget recognizes the emergence of the United States as a top producer of energy in the world, becoming the world's largest oil producer in 2018, transitioning to a net petroleum exporter in late 2019, and projected to become a net petroleum exporter for the 2020 calendar year. As a result, the commercial sector ably produces the energy needed to guard against supply disruptions in the world market. The Budget proposes a slight reduction in Government ownership of petroleum products to fund higher priorities across the energy landscape, including AI and quantum science. The Administration continues to seek strategic opportunities to utilize America's resources and innovative technology to strengthen America's position as a world leader.

"[I]nstead of relying on foreign oil and foreign energy, we are now relying on American energy and American workers like never before."

President Donald J. Trump
May 14, 2019

The Budget also makes strategic investments to accelerate the development of the next generation of American energy technologies and solutions. This includes \$2.8 billion across the Applied Energy Office portfolio to support early-stage R&D and targeted later-stage R&D. This investment helps enable the private sector to develop and deploy the next generation of solutions to usher in a more secure, resilient, affordable, and integrated energy system.

To promote efficiency and maximize impact, the Budget maintains momentum on the Advanced Energy Storage and Harsh Environment Materials Initiatives launched in fiscal year 2020 and establishes a new Critical Minerals Initiative to elevate and coordinate critical minerals activities through a national laboratory-led team modeled after the Grid Modernization Laboratory Consortium.

The Budget also supports extracting critical minerals from coal and coal byproducts as one of many non-thermal, non-power uses of coal. Research into advanced coal processing, and manufacturing of coal-based materials and products would help to develop new markets for coal, ensuring that the world's largest coal reserves would be put to good use in next-generation coal-based products and technologies. Meanwhile, robust investments in carbon capture, utilization, storage, and power generation efficiency would ensure that the existing coal power generation fleet is greener and more efficient than ever before, and ready to serve the Nation for decades to come.

Nuclear energy is also critical to the Nation's energy mix and the Budget supports an array of programs to advance nuclear energy technologies. This portfolio promotes revitalization of the domestic industry and the ability of domestic technologies to compete abroad. The Budget provides \$1.2 billion for R&D and other important nuclear energy programs, including nearly \$300 million for the construction of the Versatile Test Reactor—a first of its kind fast reactor that would help the private sector develop and demonstrate new technologies.

Supports Nuclear Fuel Cycle Capabilities. On July 12, 2019, the President determined that “...the United States uranium industry faces significant challenges in producing uranium domestically and that this is an issue of national security.” The Budget establishes a Uranium Reserve for the United States to provide additional assurances of availability of uranium in the event of a market disruption.

Manages Nuclear Waste. One large hurdle that still faces the nuclear industry is the disposal of spent nuclear fuel. The Administration believes the standstill has gone on too long. The Administration is strongly committed to fulfilling its legal obligations to manage and dispose of the Nation's nuclear waste and will not stand idly by given the stalemate on Yucca Mountain. To create momentum and ensure progress, the Administration is initiating processes to develop alternative solutions and engaging States in developing an actionable path forward. In parallel, the Budget supports the implementation of a robust interim storage program and R&D on alternative technologies for the storage, transportation, and disposal of the Nation's nuclear waste, with a focus on systems deployable where there is a willingness to host.

Maintains a Commitment to Clean Up. The Administration is committed to making progress on cleaning up waste from nuclear weapons production. The Federal Government's environmental and disposal liabilities are \$595 billion as of September 30, 2019. DOE is responsible for \$505 billion of these liabilities related to nuclear weapons production. The Budget includes \$6.1 billion for 16 sites remaining to be cleaned up to meet environmental regulatory requirements.

Aligns Infrastructure Priorities. It is long past time for the Federal Government to divest infrastructure that can be more efficiently maintained by the private sector or local partnerships. The Budget proposes to sell the transmission assets owned and operated by the Power Marketing Administrations (PMAs), including those of the Southwestern Power Administration, Western Area Power Administration, and Bonneville Power Administration. The Budget also proposes to authorize the PMAs to charge rates comparable to those charged by for-profit, investor-owned utilities, rather than being limited to cost-based rates, for electricity. This is a commonsense shift that lessens the burden on the Federal taxpayer. The vast majority of the Nation's electricity needs are met through investor-owned utilities. Reducing or eliminating the Federal Government's role in electricity transmission infrastructure ownership, thereby increasing the private sector's role, and introducing more market-based incentives, including rates, for power sales from Federal dams would encourage a more efficient allocation of economic resources and mitigate risk to taxpayers.

Addresses Unnecessarily Burdensome Energy Efficiency Regulations. Through research and reasonable regulatory actions, DOE will seek opportunities for further improvements in energy

efficiency, with an emphasis on solutions that promote consumer choice, the comfort of building occupants, and the performance of labor-saving products, devices, and equipment. Building on the recent light bulb rule success, DOE will pursue improvements to other household appliances through its standards program to improve product efficiency and meet the everyday needs of American households. In addition, DOE will demonstrate the benefits of the revamped Process Rule saving time and money for stakeholders and taxpayers alike through more effective implementation of energy efficiency standards program.